Index of Images

The Alexander horned sphere 12

A space with nontrivial local homology 14

Topological zoo 16

A 2-adic solenoid 18

The star diagram of Hertzsprung and Russell 20

Geometry of the spectrum-luminosity diagram 22

A spectral sequence 24

The cylinder of a continuous mapping 26

A fiber space 28

Spectral sequences and orbits of the action of groups 30

The action of the fundamental group on the higher homotopy groups 32

Homotopy groups of spheres 34

Deformation of the Riemann surface of an algebraic function 36

Morse functions and the theorem about the Euler characteristic 38

The separatrix diagram of a critical saddle point of a smooth function on a 3-dimensional manifold 40

Proper Morse functions on 3-dimensional manifolds 42

Motion of a heavy rigid body in space 44

An algebraic Kummer surface and its singular points 46

2-dimensional polyhedra and incidence matrices 48

Simplicial, cubic, cellular chains 50

Algebraic surfaces of higher order and the simplicial approximation theorem 52

The Euclidean plane — the simplest minimal surface 54

A theorem in symplectic geometry 56

Turbulence and associations outside mathematics 58

Spines of 3-dimensional manifolds 60

An orbit of the action of an infinite group 62

The boundary of polyhedra can be diminished when they are glued together. 64

A nontrivial knot in 3-dimensional space 66

Between two maxima there is always a saddle point. 68

A 2-dimensional sphere in 3-dimensional space can be turned inside out. 70

Simplicial complexes 72

Polyhedra and simplicial chains 74

The boundary operator 76

The method of killing spaces in homotopic topology 78

The theorem on the coincidence of simplicial and cellular homology 80

A system of shrinking neighborhoods 82

Singularities of smooth functions 84

Simplicial spaces, cellular spaces, crystal and liquid 86

Rolling and sliding 88

Combinatorial contraction 90

Geometric fantasy on the theme of analytic functions 92

Discrete groups generated by reflections 94

Construction of complicated polyhedra from simple ones, I 96

Construction of complicated polyhedra from simple ones, II 98

Construction of complicated polyhedra from simple ones, III 100

Construction of complicated polyhedra from simple ones, IV 102

From chaos to order 104

Mathematical infinity 106

Interior and boundary points of a manifold and symmetric spaces 108

Theory of oscillations and wave processes 110

Impact 112

Billiards and ergodicity 114

The Poisson-Laplace theorem and the Plateau principles 116

A heavy top drifting in space 118

How does a drop of liquid tear loose? 120

Branched coverings over a sphere 122

Anti-Dürer. From the cycle: Dialogue with authors of the 16th century 124

A stare 126

A retraction of a space onto a subspace of it 128

Spines of two 3-dimensional compact closed hyperbolic manifolds of smallest complexity 130

Picture of a gas flowing around a ball 132

Cellular spaces 134

Random processes in probability 136

Statistical fantasy 138

The remarkable numbers pi and e, II 140

The remarkable numbers pi and e, I 142

Geometry and probability 144

Gaussian distributions, I 146

Unstructured chaos and geometry 148

Gaussian distributions, II 150

Homotopy and the tearing off of a drop from a hard surface 152

Homotopy and a viscous liquid 154

Level surfaces of functions 156

Gradient descent 158

Portrait of my wife, Tanya 160

Mathematical preciseness and the concept of a fuzzy set 162

Singular points of vector fields and the boundary layer in the flow of a liquid around a rigid body 164

The music club "Topaz" in the Mechanics–Mathematics Department of Moscow University 166

The apocalypse (Revelation) 168

The temptation of St. Anthony 170

Anti-Breughel. From the cycle: Dialogue with authors of the 16th century 172

Geometric fantasy 174

Geometric fantasy 176

Topological restructuring of level surfaces of smooth functions on manifolds 178